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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/872,246	05/31/2001	Mark Chiang	LSI-00-483	2407

7590 10/19/2004  
LSI Logic Corporation  
Patent Law Department  
1551 McCarthy Boulevard, M/S D-106  
Milpitas, CA 95035

EXAMINER
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PATEL, JAY P

ART UNIT	PAPER NUMBER
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2666

DATE MAILED: 10/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/872,246

Applicant(s)

CHIANG, MARK

Examiner

Jay P. Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 05/31/2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 12 and 13 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9 is/are allowed.
- 6) ☒ Claim(s) 1 through 3, 5 through 7, 10 and 11 is/are rejected.
- 7) ☒ Claim(s) 4 and 8 is/are objected to.
- 8) ☒ Claim(s) 12 and 13 are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All. b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C.

121:

- I. Claims 1-11, drawn to a network, a switch and dynamic break functions, classified in class 370, subclass 254
- II. Claims 12 and 13, drawn to a frame, classified in class 370, subclass 473.

2. Inventions I and II are related as combination and subcombination.

Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because a closed loop or a ring network does not require an Ethernet frame to group the bytes of data in the particular order specified in claims 12 and 13. The subcombination has separate utility such as grouping of bytes of data into a single message for transmission; where the grouping is done in a particular order specified by claims 12 and 13 and the transmission doesn't necessarily have to be carried out on a closed loop or a ring network.

3. Because the inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

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4. Because the inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

5. During a telephone conversation with Henry Groth on October 13, 2004 a provisional election was made with traverse to prosecute the invention of group I, claims 1 through 11.

6. Affirmation of this election must be made by applicant in replying to this Office action. Claims 12 and 13 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined

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under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

8. Claims 1 through 3, 5 through 7, 10 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Behzadi (US Patent 6, 728, 220 B2).

9. In regards to claims 1 and 5, the reference discloses a method for preventing transmission loops "between a plurality of network nodes that are connected by transmission links to form a ring, wherein each network node on the ring includes a right side ringport that is connected to a right side neighbor and a left side ringport that is connected to a left side neighbor," (column 3 lines 6 through 11). The ring disclosed by the reference anticipates the closed loop network claimed by the applicant; furthermore, the reference clearly anticipates the applicant's claim of a plurality of switches (nodes) and discloses that each of these nodes have a right and left side ports.

In figure 7 of the reference, a ring with an odd number (7) of switches is disclosed (column 7 lines 56 through 67 continued on column 8 lines 1 through 57). According to the reference, to prevent transmission loops in the ring topology, a number of hops that the right sided ring packet travels plus the number of hops that a left side ring packet travels must be less than or equal to  $N-1$  ( $N$  minus 1 where  $N$  is the number of switches in the node). The reference further discloses that a TTL (time to live) value is determined for the right and the left side port. If the TTL value is 0 or 1 then the packet is not forwarded to the next hop. The TTL values are determined as follows:

right TTL = Max Right Hops + 2;

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left TTL = Max Right Hops + 2;

Max Right Hops = Max Left Hops =  $(N - 1)/2$ ; (when N is an odd positive integer);

Max Right Hops =  $[(N - 1)/2] + 1$ ; (when N is an even positive integer);

Max Left Hops =  $(N - 1)/2$ ; (when N is an even positive integer);

For example, in figure 7 there are 7 switches and switch 736 is designated as the transmitting switches. Applying the above formula for a ring with odd number of switches, the number of right hops will be  $[(7 - 1)/2] = 3$  and the same applies for the number of left hops. Therefore on the right side, the packet will travel from node 736 to node 734 on to node 732 and stop at node 730; on the left side, the packet will travel from node 736 to node 738 on to node 740 and stop 742. The right side packet stops at node 730 and the left side will stop at node 742.

Therefore, the link 758 between nodes 742 and 730 is unused and therefore, dynamically broken.

A similar procedure is described for an even number of switches in a ring (column 9 and figure 10). These disclosures by the reference anticipate a dynamic set of logic functions that are claimed by the applicant.

The disclosed embodiments of the reference are pertinent to both a ring network and a switch; therefore, all the embodiments relevant to the rejection of claim 1 are also pertinent to claim 5.

10. In regards to claims 2 and 6, since the network and the switch are able to perform the dynamic set of logic functions disclosed with regards to claims 1 and 5, it is inherent that the logic functions are enabled.

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11. Regarding claims 3 and 7, figure 2 of the reference shows the labeling protocol that the packets use; particularly the multi-protocol label switching protocol. The labeled packet includes a MAC header that further includes the source address. It is inherent that the source is the switch that broadcasts the packet (figure 2 and column 27 through 29). Therefore, the reference anticipates that applicant's claim of inserting an ID number of the source switch into each frame that is transmitted from the switch. Figure 12 of the reference, discloses an expanded view of two adjacent nodes on the ring. Each node (the nodes are all label switch routers (LSRs)) includes a right side ringport, a left side ringport, a packet processor, an MPLS processor and a loop protection module (column 10 lines 34 through 65). Further more, each LSR has at minimum one incoming and one outgoing unidirectional LSP associated with the ring. The packet processor handles the Data Link Layer and Network layer functions that are carried out by the LSRs. The packet processor determines which ingress packets must be flooded and furthermore generates the right and left side ring packets that are used for flooding. The packet processor functions anticipate the enabling of the transmit function of each port to monitor the ID number of each frame. The MPLS processor manages the MPLS functions of the LSR. It generates the shim headers for the packets, decrements the TTL values, provides labeling values and maintains a label information base. The MPLS processor anticipates the enabling of the receive function of each uplink port to monitor the ID number of each frame.

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12. In regards to claims 10 and 11, figure 2 describes the labeling protocol used by the reference. It is inherent from figure 2 that the source address in each frame or packet will be unique since there are multiple switches within the ring. Furthermore, as stated above, the source address is the same as the ID number in the applicant's claim. The procedures described above in regards to figures 7 and 10 of the reference; determine the farthest switch in the network from each of the plurality of switches. Since the maximum numbers of right and left hops are carefully determined according to the number of switches in the network, it is inherent that the reference anticipates the determination of the farthest switch. Figures 7, 10 and 12 clearly show that the functions are carried out within the nodes and ports and therefore the reference also anticipates the enabling of the dynamic break loop functions at the uplink ports in each of the plurality of the switches.

13. References not relied upon in the office action but considered pertinent to the art are the following:

- a. U.S. Patent 6404744 B2 (Method for designing a communications network): Saito, Hiroyuki
- b. U.S. Patent 6278695 B1 (Multi-port LAN switch for a token ring network): Christensen, Kenneth J. et al.
- c. U.S. Patent 5802042 A (Autosensing LMI protocols in frame relay networks): Natarajan, Shankar et al.



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***Allowable Subject Matter***

14. Claims 4 and 8 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. Claim 9 is allowed.

The following is an examiner's statement for reasons for allowance:

Claim 9 is allowed over the prior art of record since the cited reference taken individually or in combination fails to particularly disclose a method for determining whether the ID number is not equal to a filter ID number, then the frame will pass unchanged; and a method for determining whether the ID number is equal to the filter ID number, then the frame will be cut off and will not be allowed to pass. It is noted that the closest prior art, Behzadi (US Patent 6, 728, 220 B2) shows a source address and a destination address in the frame. However, Behzadi fails to disclose or render obvious the above underlined limitations as claimed.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jay P. Patel whose telephone number is (571) 272-3086. The examiner can normally be reached on M-F 9:00 am - 5:00 p.m..


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Q. Ngo can be reached on (571) 272-3139. The

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fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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